

Claims

1. A modulator of light comprising
an interference cavity for causing interference
modulation of the light, the cavity having a mirror, the
mirror comprising a corrugated surface.
2. A modulator of light comprising
an interference cavity for causing interference
modulation of the light to produce a color condition visible
to an observer, the color condition being determined by the
spatial configuration of the modulator.
3. The modulator of claim 2 wherein the
interference cavity comprises
a mirror and
a supporting structure holding the mirror,
and wherein the spatial configuration comprises the
configuration of the supporting structure.
4. The modulator of claim 2 wherein the
interference cavity comprises
a mirror, and wherein
the spatial configuration comprises patterning of
the mirror.
5. The modulator of claim 2 wherein the
interference cavity comprises
a mirror, and
a supporting structure holding the mirror, and
wherein the supporting structure is coupled to a rear
surface of the mirror.

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1 6. A structure for modulating light comprising
2 modulators of light each including an interference
3 cavity for causing interference modulation of the light,
4 each of the modulators having a viewing cone,
5 the viewing cones of different ones of the
6 modulators being aligned in different directions.

1 7. The structure of claim 6 in which the viewing
2 cones of the different modulators are aligned in random
3 directions.

1 8. The structure of claim 6 in which the viewing
2 cones of the modulators are narrower than the viewing cone
3 of the overall structure.

1 9. A structure for modulating light comprising
2 modulators of light each including an interference
3 cavity for causing interference modulation of the light, and
4 a liquid medium in which the modulators are
5 suspended.

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1 10. A structure for modulating light comprising
2 modulators of light each including an interference
3 cavity for causing interference modulation of the light, and
4 an optical compensation mechanism coupled to the
5 modulators which enhances the optical performance of the
6 structure.

1 11. The structure of claim 10 in which the
2 mechanism comprises a combination of one or more of a
3 holographically patterned material, a photonic crystal
4 array, a multilayer array of dielectric mirrors, or an array
5 of microlenses.

1 12. The structure of claim 1 wherein the brightness
2 and/or color are controlled by error diffusion.

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1 13. A modulator of light comprising
2 an interferometric modulator, and
3 an optical fiber coupled to the interferometric
4 modulator.

1 14. The application of claim 13 wherein the IMod is
2 used in the analysis of chemical, organic, or biological
3 components.

1 15. An information printing system comprising
2 an array of interference modulators of light,
3 a lens system, and
4 a media transport mechanism.

1 16. An image capture system comprising
2 an array of interference modulators of light,
3 a lens system, and
4 a media transport mechanism.

1 17. An information projection system comprising
2 an array of interference modulators of light,
3 a lens system,
4 mechanical scanners, and
5 control electronics.

1 18. The system of claim 17 in which the control
2 electronics are configured to generate projected images for
3 virtual environments.

1 19. The application of claim 18 in which the array
2 includes liquid crystals or microelectromechanical
3 modulators.

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- 1 20. A product comprising
2 an operational element, a display element,
3 a housing enclosing the operational element and
4 having a display element, the display element including a
5 surface viewed by a user, and
6 an array of interference modulators of light on the
7 surface.
- 1 21. The product of claim 20 in which the
2 operational element comprises a personal communications
3 device.
- 1 22. The product of claim 20 in which the
2 operational element comprises a personal information tool.
- 1 23. The product of claim 20 in which the
2 operational element comprises a vehicular control panel.
- 1 24. The product of claim 20 in which the
2 operational element comprises an instrument control panel.
- 1 25. The product of claim 20 in which the
2 operational element comprises a time keeping device.
- 1 26. The product of claim 20 in which the
2 operational element comprises an article of clothing or
3 portion thereof.
- 1 27. The product of claim 20 in which the
2 operational element comprises an item of jewelry.
- 1 28. The product of claim 20 in which the
2 operational element comprises a sporting good.
- 1 29. The product of claim 20 in which the array
2 substantially alters the aesthetic or decorative features of
3 the surface.
- 1 30. The product of claim 29 in which the aesthetic
2 component responds to a state of use of the consumer
3 product.

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1 31. The product of claim 29 in which the aesthetic
2 component is downloaded or derived from an external source.

1 32. The product of claim 29 wherein the array also
2 provides information.

1 33. The application of claim 29 wherein liquid
2 crystals, field emission, plasma, or organic emitter based
3 technologies and associated electronics are used as the
4 modulation array.

1 34. The device of claim 1 comprising an application
2 incorporating aggregate arrays of IMods.

1 35. The application of claim 34 wherein the array
2 is used to display information on signs or billboards.

1 36. A vehicle comprising
2 a body panel,

3 an array of interference modulators of light on a
4 surface of the body panel, and

5 electronic circuitry for determining the aesthetic
6 appearance of the body panel by controlling the array of
7 interference modulators.

1 37. A building comprising
2 external surface elements,

3 an array of interference modulators of light on a
4 surface of the body panel, and

5 electronic circuitry for determining the aesthetic
6 appearance of the surface elements by controlling the array
7 of interference modulators.

1 38. A full color active display comprising
2 a liquid crystal medium, and

3 interferometric elements embedded in the medium.

1 39. A structure comprising
2 a substrate,
3 micromechanical elements formed on the surface of
4 the substrate, and
5 electronics connected to control the elements, the
6 electronics being formed also on the surface of the
7 substrate.

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